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## (54) TFT-EL display panel using organic electroluminescent media

(57) A flat panel display comprising thin-film-transistor-electroluminescent (TFT-EL) pixels is described. An addressing scheme incorporating two TFTs and a storage capacitor is used to enable the EL pixels on the panel to operate at a duty factor close to 100%. This TFT-EL device eliminates the need to pattern the EL

cathode, thus greatly simplifying the procedure to delineate the EL pixels as well as ensuring high resolution. The TFT-EL panel consumes less power than conventional TFT-LCD panels, especially when the usage factor of the screen is less than unity.

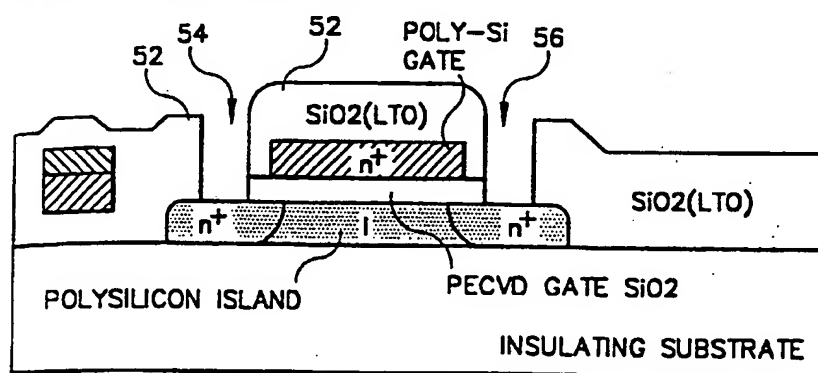


FIG. 5



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# EUROPEAN SEARCH REPORT

Application Number  
EP 95 11 9100

| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |                                  |  |
|---|--|----------------------------------|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim                | CLASSIFICATION OF THE APPLICATION (Int.CI.6) |
| A   | PATENT ABSTRACTS OF JAPAN<br>vol. 095, no. 002, 31 March 1995<br>-& JP 06 325869 A (MITSUBISHI KASEI CORP), 25 November 1994<br>* abstract * | 1                                | H01L27/15<br>G09G3/32                        |
| D,A   | US 4 042 854 A (LUO FANG-CHEN ET AL)<br>16 August 1977<br>* abstract; figures 3,4 *  | 1                                |  |
| A   | EP 0 365 445 A (EASTMAN KODAK CO)<br>25 April 1990<br>* abstract; figures *  | 1                                |  |
| D,A   | EP 0 553 496 A (EASTMAN KODAK CO)<br>4 August 1993<br>* abstract; figures *  | 1                                |  |
|   |  |                                  | TECHNICAL FIELDS SEARCHED (Int.CI.6)         |
|   |  |                                  | H01L<br>G09G                                 |
| The present search report has been drawn up for all claims  |  |                                  |  |
| Place of search   |  | Date of completion of the search | Examiner                                     |
| THE HAGUE   |  | 14 April 1999                    | De Laere, A                                  |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |  |                                  |  |

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 95 11 9100

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The members are as contained in the European Patent Office EDP file on  
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14-04-1999

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
| US 4042854 A                              | 16-08-1977          | DE 2652296 A               | 26-05-1977          |
|   |                     | FR 2332585 A               | 17-06-1977          |
|   |                     | GB 1563243 A               | 19-03-1980          |
|   |                     | JP 52064891 A              | 28-05-1977          |
|   |                     | NL 7612128 A               | 24-05-1977          |
|   |                     | US 4135959 A               | 23-01-1979          |
| EP 0365445 A                              | 25-04-1990          | US 4996523 A               | 26-02-1991          |
|   |                     | DE 68914389 D              | 11-05-1994          |
|   |                     | DE 68914389 T              | 13-10-1994          |
|   |                     | JP 2148687 A               | 07-06-1990          |
|   |                     | JP 2729089 B               | 18-03-1998          |
| EP 0553496 A                              | 04-08-1993          | US 5276380 A               | 04-01-1994          |
|   |                     | CA 2085298 A               | 01-07-1993          |
|   |                     | DE 69217475 D              | 27-03-1997          |
|   |                     | DE 69217475 T              | 28-08-1997          |
|   |                     | JP 5275172 A               | 22-10-1993          |